

What is claimed is:

1. A method for expressing in a plant a heterologous glycerol-3-phosphate dehydrogenase that is less sensitive to feedback inhibition than wild type glycerol-3-phosphate dehydrogenase, the method comprising the steps of:
5 providing a vector comprising a DNA sequence encoding a glycerol-3-phosphate dehydrogenase that is less sensitive to feedback inhibition than wild type glycerol-3-phosphate dehydrogenase; and transforming the plant with the vector.
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2. A method according to claim 1, wherein the glycerol-3-phosphate dehydrogenase has a single amino acid substitution which renders it feedback defective, while not significantly altering its catalytic ability.
- 15 3. A method according to claim 1, wherein the glycerol-3-phosphate dehydrogenase is *gpsA2^{FR}*.
4. A method according to claim 1, wherein the DNA sequence comprises a DNA sequence encoding the amino acid sequence listed in SEQ ID
20 NO: 2.
5. A method according to claim 1, wherein the DNA sequence encoding the glycerol-3-phosphate dehydrogenase comprises the sequence listed in SEQ ID NO: 1.
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6. A method according to claim 1, wherein the glycerol-3-phosphate dehydrogenase has the amino acid sequence listed in SEQ ID NO: 2.
7. A method according to claim 1, wherein the plant is an oil seed
30 bearing plant.

16. A plant according to claim 10, wherein the plant is an oil seed bearing plant.

17. A plant according to claim 10, wherein the plant is of the genus *Brassica*.
18. A plant according to claim 10, wherein the plant is *Arabidopsis thaliana*.
- 5 19. A method for producing a genetically altered plant having altered fatty acid content in its glycerolipids, the method comprising the steps of:
providing a vector comprising a DNA sequence encoding a
glycerol-3-phosphate dehydrogenase that is less sensitive to feedback
10 inhibition than wild type glycerol-3-phosphate dehydrogenase; and
transforming the plant with the vector.
20. A method according to claim 19, wherein the glycerol-3-phosphate
dehydrogenase has a single amino acid substitution which renders it
15 feedback defective, while not significantly altering its catalytic ability.
21. A method according to claim 19, wherein the glycerol-3-phosphate
dehydrogenase is gpsA2^{FR}.
- 20 22. A method according to claim 19, wherein the DNA sequence comprises
a DNA sequence encoding the amino acid sequence listed in SEQ ID
NO: 2.
23. A method according to claim 19, wherein the DNA sequence encoding
25 the glycerol-3-phosphate dehydrogenase comprises the sequence listed
in SEQ ID NO: 1.
24. A method according to claim 19, wherein the glycerol-3-phosphate
dehydrogenase has the amino acid sequence listed in SEQ ID NO: 2.

25. A method according to claim 19, wherein the plant is an oil seed bearing plant.
26. A method according to claim 19, wherein the plant is of the genus *Brassica*.
27. A method according to claim 19, wherein the plant is *Arabidopsis thaliana*.
28. A method according to claim 19, wherein the plant glycerolipid has elevated levels of C16 fatty acids.
29. A method for producing a genetically altered plant having increased stress tolerance relative to the wild type, the method comprising the steps of:
providing a vector comprising a DNA sequence encoding a glycerol-3-phosphate dehydrogenase that is less sensitive to feedback inhibition than wild type glycerol-3-phosphate dehydrogenase; and transforming the plant with the vector.
30. A method according to claim 29, wherein the glycerol-3-phosphate dehydrogenase has a single amino acid substitution which renders it feedback defective, while not significantly altering its catalytic ability.
31. A method according to claim 29, wherein the glycerol-3-phosphate dehydrogenase is gpsA2^{FR}.
32. A method according to claim 29, wherein the DNA sequence comprises a DNA sequence encoding the amino acid sequence listed in SEQ ID NO: 2.

33. A method according to claim 29, wherein the DNA sequence encoding the glycerol-3-phosphate dehydrogenase comprises the sequence listed in SEQ ID NO: 1.
- 5 34. A method according to claim 29, wherein the glycerol-3-phosphate dehydrogenase has the amino acid sequence listed in SEQ ID NO: 2.
35. A method according to claim 29, wherein the plant is an oil seed bearing plant.
- 10 36. A method according to claim 29, wherein the plant is of the genus *Brassica*.
- 15 37. A method according to claim 29, wherein the plant is *Arabidopsis thaliana*.
38. A method according to claim 29, wherein the stress is osmotic stress.
- 20 39. A vector for genetically transforming a plant, wherein the vector comprises a DNA encoding a protein having glycerol-3-phosphate dehydrogenase activity, and the plant, after transforming, exhibits enhanced biosynthesis of glycerol and/or glycerol-3-phosphate.